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b. a computer program, stored on said memory medium, said computer program comprising program code for allocating bandwidth across a communications interface of a computer available to processes running on said computer, said program code including:

program code for associating priority values with the processes;

program code for receiving a request for data from one of the processes;

program code for determining a ratio of the priority value for said one of the processes to a sum of the priority values; and

program code for allocating bandwidth to said one of the processes based on the request and the ratio.

REMARKS

By this Amendment, Applicant cancels claim 42 without prejudice or disclaimer and amends claims 40, 53, 57 and 64 to more appropriately define the invention. Claims 40, 41, 43-47, 53-58 and 64 remain pending.

In the Office Action, identified above, the Examiner rejected claim 57 under 35 U.S.C. § 112, second paragraph; rejected claims 40, 45-47, 53, 57, 58, and 64 under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,055,577 to Lee et al. ("Lee"); rejected claims 41-43, 54 and 55 under 35 U.S.C. § 103(a) as unpatentable over Lee in view of U.S. Patent No. 5,596,576 to Milito ("Milito"); and rejected claims 44 and 56 under 35 U.S.C. § 103(a) as unpatentable over Lee in view of U.S. Patent No. 6,396,816 to Astle et al. ("Astle").

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
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Rejections under 35 U.S.C. § 112, second paragraph

Regarding the rejection under 35 U.S.C. § 112, second paragraph, Applicant amends claims 57 to more particularly claim the subject matter which Applicant regards as the invention. Accordingly, the rejection under 35 U.S.C. § 112, second paragraph should be deemed overcome.

Rejections under 35 U.S.C. § 102(e)

Regarding claim 40, Lee fails to teach the combination of claim 40, including, for example, "reallocat[ing] bandwidth assigned to users connected to said server over said communications interface, the computer reallocating bandwidth in response to a request for data from one of the users over the communications interface."

Lee teaches a system for granting bandwidth to real-time and non-real time processes. Lee discloses that to prevent non-real time process 216 from dominating the available I/O bandwidth, the file server forces the non-real time process to re-arbitrate the assigned I/O data rate after the non-real time process has had access to the requested file at the assigned I/O data rate for some pre-defined time period (i.e., time slice) (col. 7, lines 8-13). When the time slice expires, the non-real time process 216 again requests the file server 205 for access to the desired file and again be assigned an I/O data rate by the file server (col. 7, lines 13-16). Thus, the system of Lee discloses balancing a load of real-time and non-real time processes by timing out the non-real time process after an elapsed time period and making the non-real time process request access again. The data rate of the non-real time process varies on each subsequent re-connect in accordance with the available bandwidth after

accommodating the real-time processes. The non-real time process 216, not the client 220, sends this request to reconnect. The non-real time processes include copy operations, loading operations, or back-up processes that run within real-time processes (col. 5, lines 24 -25).

Therefore, the actions of the non-real time process taught by Lee do not constitute "reallocat[ing] bandwidth assigned to users connected to said server over said communications interface, the computer reallocating bandwidth in response to a request for data from one of the users over the communications interface," as recited in claim 40 (emphasis added). Because Lee does not teach each and every recitation of claim 40, Applicant requests that the rejection of this claim under 35 U.S.C. § 102(e) be withdrawn and the claim allowed.

Claims 45-47 depend from claim 40. As explained, claim 40 is allowable over Lee. Accordingly, dependent claims 45-47 are also allowable over this reference for at least the same reasons set forth for claim 40, and Applicant requests that the rejection of these claims under 35 U.S.C. § 102(e) be withdrawn and the claims allowed.

Claim 53 includes recitations similar to those of claim 40. Specifically, claim 53 recites a combination including, for example, "receiving a request for data from one of the plurality of users over the communications interface," and "reallocating bandwidth assigned to the plurality of users based on the request."

As explained above, Lee discloses a non-real time process re-requesting a desired file from file server 205 after it times out. The request is from the non-real time process 216, not a user. Therefore, the actions of Lee do not constitute "receiving a request for data from one of the plurality of users over the communications interface,"

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1300 I Street, NW
Washington, DC 20005
202.408.4000
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as recited in claim 53. Further, the actions of Lee, which are based on a timing mechanism, do not constitute "reallocating bandwidth assigned to the plurality of users based on the request," as recited in claim 53. Accordingly, claim 53 is also allowable over Lee for at least the same reasons set forth for claim 40, and Applicant requests that the rejection of this claim under 35 U.S.C. § 102(e) be withdrawn and the claim allowed.

Claims 57 and 58 depend from claim 53. As explained, claim 53 is allowable over Lee. Accordingly, claims 57 and 58 are also allowable for at least the same reasons set forth for claim 10, and Applicant requests that the rejection of these claims under 35 U.S.C. § 102(e) be withdrawn and the claims allowed.

Claim 64 recites a combination including, for example, "program code for associating priority values with the processes," "program code for determining a ratio of the priority value for said one of the processes to a sum of the priority values," and "program code for allocating bandwidth to said one of the processes based on the request and the ratio."

In contrast, the actions of Lee do not constitute "associating priority values with the processes," let alone "determining a ratio of the priority value for said one of the processes to a sum of the priority values," and "allocating bandwidth to said one of the processes based on the request and the ratio," as recited in claim 64.

Because Lee does not disclose each and every recitation of claim 64, Applicant requests that the rejection of this claim under 35 U.S.C. § 102(e) be withdrawn and the claim allowed.

Rejections under 35 U.S.C. § 103(a)

Claims 41 and 43 depend from claim 40, and thus include all the elements and limitations thereof. As explained, Lee fails to teach or suggest a combination including, for example, "reallocate[ing] bandwidth assigned to users connected to said server over said communications interface, the computer reallocating bandwidth in response to a request for data from one of the users over the communications interface," as recited in claim 40.

Milito, which the Examiner relies upon for allegedly disclosing allocating bandwidth according to a number of users, does not cure the deficiencies of Lee. That is, Milito also fails to teach "reallocate[ing] bandwidth assigned to users connected to said server over said communications interface, the computer reallocating bandwidth in response to a request for data from one of the users over the communications interface," as recited in claim 40. Milito discloses a variant of a "token and leaky bucket" scheme for granting access to a resource at a minimum guaranteed rate associated with each user, but does not teach or suggest at least "reallocate[ing] bandwidth assigned to users connected to said server over said communications interface, the computer reallocating bandwidth in response to a request for data from one of the users over the communications interface," as required by claims 41 and 43.

Claim 41 further recites that the "bandwidth is allocated to users based on the number of users and on the types of data each is requesting from the server." The Examiner at page 4 of the Office Action asserts that "Lee discloses that the allocation is based on the amount of bandwidth requested at the server, as well as the types of data each user is requesting from the server." This characterization is incorrect. Lee does

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HENDERSON
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GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
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not disclose allocating bandwidth "to users based on the ... types of data each is requesting from the server," as recited in claim 41. In Lee, the I/O bandwidth used by the non-real time processes 216 is adjusted when they re-request access to the desired file. However, this adjustment is not based on types of data each user is requesting from the server. As described above, the non-real time processes, not a user, request access. Further, in Lee the I/O bandwidth is not allocated based on data type, but rather, on whether the process requesting the data is performed in real-time or non-real time. Lee does not disclose or suggest a system wherein "bandwidth is allocated to users based on the number of users and on the types of data each is requesting from the server," as recited in claim 41.

Milito fails to cure the deficiencies of Lee. That is, Milito, which relates to a method for sharing resources, fails to teach or suggest "bandwidth is allocated to users based on the number of users and on the types of data each is requesting from the server," as recited in claim 41. In fact, Milito does not discuss the type of data in allocating bandwidth.

Therefore, because neither Lee nor Milito, taken alone or in any reasonable combination, teach or suggest the elements of claims 41 and 43, claims 41 and 43 are allowable over the references. Therefore, Applicant requests that the rejection of claims 41-43 under 35 U.S.C. § 103(a) be withdrawn and the claims be allowed.

Claims 54 and 55 depend from claim 53, and thus include all the elements and limitations thereof. As explained, Lee fails to teach or suggest a combination including, for example, "receiving a request for data from one of the plurality of users over the

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1300 I Street, NW
Washington, DC 20005
202.408.4000
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communications interface,” and “reallocating bandwidth assigned to the plurality of users based on the request,” as recited in claim 53.

Milito does not cure the deficiencies of Lee. That is, Milito, as described above, also fails to teach “receiving a request for data from one of the plurality of users over the communications interface,” and “reallocating bandwidth assigned to the plurality of users based on the request,” as recited in claim 53, and included in dependent claims 54 and 55.

Claim 54 further recites that the “bandwidth is allocated to users based on the number of users and on the types of data each is requesting from the server.” As described above, neither Lee nor Milito does not disclose allocating bandwidth “to users based on the ... types of data each is requesting from the server,” as recited in claim 54.

Therefore, because neither Lee nor Milito teach or suggest the elements of claims 54 and 55, claims 54 and 55 are allowable over a combination of Lee and Milito. Therefore, Applicant requests that the rejection of claims 54 and 55 under 35 U.S.C. § 103(a) be withdrawn and the claims allowed.

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1300 I Street, NW
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202.408.4000
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Claims 44 depends from claim 40, and thus include all the elements and limitations thereof. As explained, Lee fails to teach or suggest a combination including, for example, "reallocat[ing] bandwidth assigned to users connected to said server over said communications interface, the computer reallocating bandwidth in response to a request for data from one of the users over the communications interface," as recited in claim 40.

Astle, which the Examiner relies upon for allegedly associating priority with bandwidth allocation, does not cure the deficiencies of Lee. That is, Astle also fails to teach or suggest "reallocat[ing] bandwidth assigned to users connected to said server over said communications interface, the computer reallocating bandwidth in response to a request for data from one of the users over the communications interface," as required by claim 44.

In addition, claim 44 further recites that "each type of data has an associated priority." Lee does not teach or suggest that "each type of data has an associated priority," as recited in claim 44. Astle also does not teach or suggest that "each type of data has an associated priority," as recited in claim 44. Instead, Astle discloses that a terminal is associated with a priority (col. 4, lines 6-7).

Because a combination of Lee and Astle fails to teach or suggest the combination of elements of claim 44, Applicant requests that the rejection of claim 44 under 35 U.S.C. § 103(a) be withdrawn and the claims allowed.

Claims 56 depends from 53, and thus include all the elements and limitations thereof. As explained, Lee fails to teach or suggest a combination including, for example, "receiving a request for data from one of the plurality of users over the

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1300 I Street, NW
Washington, DC 20005
202.408.4000
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communications interface,” and “reallocating bandwidth assigned to the plurality of users based on the request,” as recited in claim 53.

As described above, Astle does not cure the deficiencies of Lee. That is, Astle also fails to teach or suggest “receiving a request for data from one of the plurality of users over the communications interface,” and “reallocating bandwidth assigned to the plurality of users based on the request,” as recited in claim 53, and included in claim 56.

In addition, claim 56 further recites that “each type of data has an associated priority.” Lee does not teach or suggest that “each type of data has an associated priority,” as recited in claim 56. Astle also does not teach or suggest that “each type of data has an associated priority,” as recited in claim 56. Instead, Astle discloses that a terminal is associated with a priority (col. 4, lines 6-7).

Because a combination of Lee and Astle fails to teach or suggest the combination of elements of claim 56, Applicant requests that the rejection of claim 56 under 35 U.S.C. § 103(a) be withdrawn and the claims allowed.

In view of the foregoing amendments and remarks, Applicant respectfully requests the reconsideration and reexamination of this application and the timely allowance of the pending claims.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: May 7, 2003

By: Tara Bleech
Tara L. Bleech
Reg. No. 46,559

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

APPENDIX OF AMENDMENTS TO THE CLAIMS

Please amend claims 40, 53, 57 and 64, as indicated in the attached Appendix.

40. (Amended) Computer apparatus for allocating communications bandwidth, comprising:

a. a computer having a communications interface for sending information over a communications link; and

b. a program on said computer, to permit said computer to act as a server, said program when running, enabling said computer to reallocate bandwidth assigned to users connected to said server over said communications interface;

the computer reallocating bandwidth in response to a request for data from one of the users over the communications interface.

53. (Amended) A method for allocating communications bandwidth across a communications interface of a computer, comprising the steps of:

a. providing information to a plurality of users connected to said computer across said communications interface; [and]

b. receiving a request for data from one of the plurality of users over the communications interface; and

[b]c. [enabling said computer to reallocate] reallocating bandwidth assigned to the plurality of users [connected to said server over said communications interface] based on the request.

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57. (Amended) The method of claim 54 in which, when a process is unable to receive information at a rate allocated to that process, the [user] process is excluded from a reallocation of available bandwidth.

64. (Amended) A computer program product, comprising:

a. a memory medium;

b. a computer program, stored on said memory medium, said computer program comprising [instructions] program code for allocating bandwidth across a communications interface of a computer available to processes running on said computer, said program code including:

program code for associating priority values with the processes;

program code for receiving a request for data from one of the processes;

program code for determining a ratio of the priority value for said one of the processes to a sum of the priority values; and

program code for allocating bandwidth to said one of the processes based on the request and the ratio.

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HENDERSON
FARABOW
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1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
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